IN THE CLAIMS:

1. (PREVIOUSLY PRESENTED) In a plurality of intermediate network devices having a plurality of ports for forwarding network messages within a bridged network having a root, the plurality of intermediate network devices organized as a stack, each intermediate network device having a stack port for use in communicating with the other network devices of the stack, a method for efficiently transitioning the ports among a plurality of spanning tree protocol (STP) states, the method comprising the steps of:

executing the STP at each intermediate network device of the stack so as to assign the stack port of each device to either a Root Port Role or a Designated Port Role, and to assign a non-stack port at a single device of the stack to the Root Port Role;

transitioning the ports assigned to the Root Port Role and the Designated Port Role to a forwarding STP state;

designating all non-stack ports at the devices of the stack that provide connectivity to the root, other than the non-stack port assigned to the Root Port Role, as Alternate Stack Root Ports;

transitioning the Alternate Stack Root Ports to a discarding STP state; and

in response to a failure at the non-stack port assigned to the Root Port Role, transitioning a selected one of the Alternate Stack Root Ports from the discarding STP state directly to the forwarding STP state, without transitioning the selected port through any intermediary STP states, so that the selected Alternate Stack Root Port assumes Root Port Role for the stack.

2. (ORIGINAL) The method of claim 1 wherein

each Alternate Stack Root Port has a respective cost to the root; and

the selected one of the Alternate Stack Root Ports that is transitioned to the forwarding STP state is the Alternate Stack Root Port whose cost to the root is lowest.

3. (ORIGINAL) The method of claim 2 further comprising the step of, in response to the failure at the non-stack port assigned to the Root Port Role, generating and issuing, from one or more source devices of the stack for receipt by one or more other devices of the stack, one or more bridge protocol data unit (BPDU) messages proposing to transition a given Alternate Stack Root Port of the device to the forwarding STP state.

4. (ORIGINAL) The method of claim 3 further comprising the step generating and issuing, in response to the proposal BPDU message, one or more Rapid Transition Acknowledgement messages to the source device agreeing with the source device's proposal to transition the given Alternate Stack Root Port to the forwarding STP state.

5. (ORIGINAL) The method of claim 4 further comprising the step of transitioning the given Alternate Stack Root Port of the source device from the discarding STP state directly to the forwarding STP state, without passing through any intermediary states, provided that the source device receives a Rapid Transition Acknowledgement message from each other member of the stack.

6. (ORIGINAL) The method of claim 1 wherein the spanning tree protocol is one of the IEEE Std 802.1w.1w-2001 and the IEEE Std. 802.1s-2002 specification standards.

7. (ORIGINAL) The method of claim 1 further comprising the step of associating each stack port with a port cost of zero, such that the stack port of each device is assigned to either a Root Port Role or a Designated Port Role.

8. (ORIGINAL) The method of claim 1 further comprising the step of monitoring which intermediate network devices are organized as the stack.

9. (ORIGINAL) The method of claim 8 wherein the step of monitoring comprises the step of periodically exchanging Discovery Hello messages among the intermediate network devices organized as the stack.

10-13. (CANCELLED)

14. (PREVIOUSLY PRESENTED) In an intermediate network device having a plurality of ports for forwarding network messages within a bridged network, and a stack port for communicating with one or more other intermediate network devices that together form a stack, a method for efficiently transitioning the ports among a plurality of spanning tree protocol (STP) states, the method comprising the steps of:

executing the STP so as to assign the stack port to a Root Port Role;

transitioning the stack port, which has been assigned to the Root Port Role, to a forwarding STP state;

designating all non-stack ports that provide connectivity to the root as Alternate Stack Root Ports;

transitioning the Alternate Stack Root Ports to a discarding STP state; and

in response to receiving from a source intermediate network device a proposal Bridge Protocol Data Unit (BPDU) message on the stack port that specifies a path cost to the root and that seeks to transition a port of the source device to a forwarding state, issuing one or more Rapid Transition Acknowledgment messages to the source device, provided that the specified path cost of the proposal BPDU is lower than the root path costs associated with the Alternate Stack Root Ports, wherein

the one or more Rapid Transition Acknowledgment messages signal the intermediate network device's agreement to the port of the source device transitioning directly to the forwarding state without transitioning through any intermediary STP states, so that the port of the source device assumes Root Port Role for the stack.

15. (PREVIOUSLY PRESENTED) The method of claim 14 further comprising the step of issuing a proposal BPDU message to the source device, provided that the specified path cost of the proposal BPDU that was received is higher than the root path cost associated with a selected one of the Alternate Stack Root Ports.

16. (PREVIOUSLY PRESENTED) The method of claim 15 further comprising the step of transitioning the selected Alternate Stack Root Port from a discarding state directly to a forwarding state provided that the intermediate network device receives a Rapid Transition Acknowledgment message from each device that forms part of the stack.

17. (PREVIOUSLY PRESENTED) The method of claim 16 wherein

the intermediate network device recognizes one or more Virtual Local Area Networks (VLANs), and

the stack port is forwarding for all VLANs recognized by the intermediate network device.

18. (PREVIOUSLY PRESENTED) The method of claim 1 further comprising:

associating each stack port with a cost lower than that of non-stack ports to cause all the stack ports to be assigned to the forwarding STP state.

19. (CANCELLED)

20. (PREVIOUSLY PRESENTED) An apparatus comprising:

means for executing a spanning tree protocol (STP) to assign a stack port of the apparatus to a Root Port Role, the stack port for communicating with one or more other apparatus that together form a stack;

means for transitioning the stack port, which has been assigned to the Root Port Role, to a forwarding STP state;

means for designating a plurality of non-stack ports of the apparatus that provide connectivity to a root as Alternate Stack Root Ports;

means for transitioning the Alternate Stack Root Ports to a discarding STP state; and

means for issuing, in response to receiving from a source device a proposal Bridge Protocol Data Unit (BPDU) message on the stack port that specifies a path cost to the root and that seeks to transition a port of the source device to a forwarding state, one or more Rapid Transition Acknowledgment messages to the source device, provided that the specified path cost of the proposal BPDU is lower than the root path costs associated with the Alternate Stack Root Ports, wherein

the one or more Rapid Transition Acknowledgment messages signal the apparatus's agreement to the port of the source device transitioning directly to the forwarding state without transitioning through any intermediary STP states, so that the port of the source device assumes Root Port Role for the stack.